REMARKS

By this Amendment the specification has been corrected on pages 6, 7 and 8 as suggested by the examiner, and claims 1-12 have been replaced with new claims 13-29 which better define the invention and overcome the examiner's formality rejections under 35 U.S.C. 112. Entry is requested.

The examiner has rejected claims 1-10 under 35 U.S.C. 102(b) as being anticipated by Berger, and he has rejected claim 12 as being unpatentable over Kuroiwa in view of Berger. These rejections must be withdrawn.

Berger discloses a pressure regulation valve having "secondary venting measures" with reduced tendency for oscillation. This is comprised by having an arrangement of two different valves, one valve consisting of the primary control section 15 and one consisting of control section 56 in conjunction with valve seat 55, connected and regulated by the position of a diaphragm 33 and a comparison chamber 27. In case of a pressure drop in the secondary duct 9, the pressure is increased by opening of control section 15, which leads to a flow from the primary duct 6 to the secondary 9, whereas in case of an pressure increase in the secondary duct 9, a flow is established by opening of control section 56 into the spring chamber 38 out of the regulator through the outlet ducts

43 into the atmosphere. Consequently every increase of pressure in the secondary duct leads to a relief via control section 56 to atmosphere.

According to the present application only one valve arrangement is used for regulating the pressure in the output section 46 of the regulator, consisting of valve element 49 and the valve seat comprised by the lower housing 41. So a pressure decrease in the output section 46 leads to a flow from the input section 48 via the valve element 49 to the output section 46. As the disclosed pressure regulator is used for regulating the pressure downstream of a flow meter for measuring fluid consumption, a pressure increase in the output section of the regulator 46 must not lead to a relief of fluid out of the pressure regulator, at least during normal operation. Normal operation means according to the application: return flow of at least a short duration or volume expansion due to temperature increase downstream the regulator. A relief of fluid would lead to a measurement error of the fluid consumption within the entire arrangement. To serve for this feature the expanded volume of fluid can be stored in a catch volume comprised by a concave diaphragm 40 and the lower housing 41. Therefore in case of normal operation a certain volume of at least a few ml of fluid can be stored in the regulator, making sure an accurate fluid measurement.

For safety reasons there is an additional valve arrangement 54 utilized, consisting of the valve element 55 and the lower housing 41, which opens only if the catch volume within the regulator is not sufficient

for the amount of fluid flowing back (which is not the normal operation if the regulator is designed appropriately) and consequently the pressure increases significantly above the adjusted pressure of the regulator (adjusted by means of the force onto the diaphragm 40).

In case of the application of a pressure regulator regulating the pressure downstream of a flow sensor, the regulator according to Berger would not be a solution for the following reasons:

- In Berger the fluid volume which is conducted into the regulator and which causes a pressure increase in the secondary duct 9 is not stored within the regulator. Instead, it is relieved to atmosphere by means of a valve arrangement.
- For application in a fluid measurement system the relief of fluid into atmosphere of the known regulator would cause a significant measurement error of the flow measurement in case of back-flow.
- Berger regulates the pressure in the secondary duct by means of the two valve arrangements within certain pressure limits adjusted by the forces of two springs 58 and 37. The pressure for opening valve element 15 and control section 56 will for his application be only slightly different. This will always prevent an adverse pressure increase in the secondary duct by relief of fluid out of the regulator. There is no need for a safety valve, which opens at an increased pressure in the secondary duct.

- In contrast, in the present invention, the safety valve will be closed during operation as long as downstream flow occurs or in case of back-flow as long as the catch volume is sufficient to store the fluid within the regulator. So during normal operation this comprises an accurate flow measurement even for back-flow. Only for safety reasons, if the catch volume is insufficient, at an increased pressure in the outlet section of the regulator, some fluid will be relieved via the safety valve.

Taking into account the above, a person of ordinary skill in the art would not use a pressure regulator as disclosed by Berger in a device for continuous measuring of dynamic fluid consumption.

- The arrangement according to Berger and also other commercially available relieving pressure regulators usually used for pressure regulation of pressurized air, would not be applicable for comprising an accurate flow measurement as the relief of fluid in case of an pressure increase would lead to an significant measurement error.

- For measurement purposes, volume increased by thermal expansions or other root causes has to be stored within the measurement circuit.

- For storing fluid state of the art would be to use expansion vessels known from household-type heating devices. The disadvantage of the usage of such vessels for an application for fuel consumption measurement, is that the filling pressure of those vessels have to be

adjusted to the working pressure of the heating circuit, which is not applicable, if the pressure adjustment have to be done often.

- Combining the regulation function with the storing function as in the fluid consumption application leads to a cost effective solution, where an expansion volume is comprised and no additional pressure adjustment have to be done.

Kuroiwa et al. disclose a fuel flow detector and fuel controller valve. However, for the reasons noted above, it would not be obvious to utilize the pressure regulating valve of Berger in Kuroiwa et al.

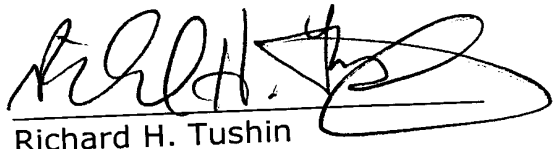
The examiner's rejections should be withdrawn.

Favorable reconsideration of this application is requested.

A substitute Declaration is submitted herewith.

Respectfully submitted,

DYKEMA GOSSETT PLLC

By: 

Richard H. Tushin
Registration No. 27,297
Franklin Square, Third Floor West
1300 I Street, N.W.
Washington, DC 20005-3353
(202) 906-8680